MEMO

DATE: December 21, 2007
TO: Sonja Nowakowski

FROM: Bonnie Lovelace, Chief, Water Protection Bureau

RE: Comments on IOGCC model rules and report for Carbon Capture and geologic sequestration

1. Your analysis is well done and addresses the major issues associated with development of public policy for this practice.

2. The EPA analysis through the Office of Groundwater and Drinking Water identifies a number of weaknesses in the model rules. These are all relevant to proper regulation and protection of public health, safety and the environment. Further, they address the need for public involvement processes typical of such major public policy decisions.

3. The IOGCC stance that CO2 capture and sequestration should be treated **solely** as a commodity lacks the reality consideration directly addressed before the ETIC, that the oil and gas industry cannot use all the possible CO2 that could be sequestered. Therefore, some portion of it would actually be a waste.

4. The IOGCC suggestion that "nothing would be achieved by regarding CO2 geologic storage as a regulatory protection solution to a waste problem" ignores very real issues of environmental protection and public health and safety. Further, the IOGCC discusses liabilities and closure of sites, but sees no value in addressing these factors. In fact, the report is liberally peppered with statements that suggest further work by states in resolving issues: "ultimately it will be up to the State Regulatory Agency to decide what is and what is not suitable to long-term geologic storage" and "Given that the state is the proposed "caretaker" and responsible party during the Post-Closure Period, the Task Force did not address monitoring and related issues…" All this is concluded while admitting that security and leak detection are necessary.

5. The IOGCC report did focus on sequestering CO2 in such a way that it does not affect drinking water supplies. While the EPA identified valid issues with this attempt that need to be addressed, there are additional considerations. In Montana, if some Class III waters and Class IV waters were targeted, nondegradation regulation would not apply, thus limiting existing regulatory requirements. However, the role of the Water Quality Act would need clarification in any final solution. Currently, the only discharges to groundwater permitted pursuant to the safe drinking water act (UIC*=Underground Injection Control; contains 5 classes*footnote) exempted (75-5-401 (5) (a)) from groundwater permitting are Class II, oil and gas activity. If another class of UIC permit applies to this activity, it is not exempt. Therefore, dual permitting would apply, but only to that portion of the activity currently regulated under the Water Quality Act (not engineering, site selection and other activities). See detailed analysis below for Montana Water Quality Act (MTWQA) considerations.

6. The IOGCC report does little to address the quality issues associated with the proposed practices. It identifies a 95% purity of CO2 and acknowledges such pollutants as H2S, NOx and SO2. Many other potential pollutants are not acknowledged. In Montana, discharge of carcinogens and toxics would be a major consideration under current law.

I am attaching a technical discussion of the applicability of the Montana Water Quality Act to geologic carbon sequestration. Contact me if you have questions.

*footnote: The DEQ analyzed the UIC program in 1997 to consider whether or not to seek primacy for the Class V- shallow injection well- portion. For a number of reasons, the DEQ chose not to pursue delegation. Chief amongst the reasons were: EPA would not approve just the one class, they insisted that DEQ take on all classes not already delegated (Class II), at that time, 32 different types of permits existed in the Class V program alone and the rules were changing significantly, DEQ management did not believe that it was a good time to seek delegation; and DEQ management believed that EPA would not provide sufficient resources to manage the programs. Because the Water Quality Act requires fees for our permits, we believed that requiring fee payment from all the small sources identified in the UIC program would be a burden to operators such as dry cleaners and garage shops.

Detailed MTWQA considerations, regulatory framework and existing regulation applicability:

Regardless of classification of the injectate as hazardous waste or a commodity the definition of an industrial waste in the MTWQA likely applies. The Act, via the Montana Groundwater Pollution Control System (MGWPCS) classifies state waters, defines applicable standards and beneficial uses for each class, and regulates discharges of industrial wastes to state water independent of the Federal UIC program and SDWA. The State may not permit disposal of hazardous waste to state water via the MGWPCS program. Ultimately, MT WQA and MGWPCS would have jurisdiction and would need to be modified or included by reference. Modification of the MTWQA to exclude its applicability and jurisdiction in this case may impact jurisdiction and/or authority of the Act to regulate other currently regulated activities, therefore if this happens, careful word smithing would be required.

Underground Sources of Drinking Water is defined in the IOGCC model regulations as an "aquifer or its portion which is a public water supply…….. contains fewer than 10,000 mg/L TDS …"

The MT WQA classifies state ground water based on specific conductivity (SC) in microSiemen/cm (uS/cm). USGS (1989) published a numeric equation that can be used to estimate SC based on TDS. The equation is KA=S, where K is specific conductance in umohs/cm (1umoh/cm is equivalent to 1uS/cm), S is dissolved solids in mg/L and A is a numeric constant that ranges from 0.54 to 0.96. Rearranging the equation to solve for K yields K=S/A. Using the given range of values for A, K ranges from 18,518 to 10,416 umohs/cm at a TDS of 10,000mg/L.

Strictly speaking the relationship between EC and TDS is water specific and is affected by the complexity and diversity of dissolved parameters. Nonetheless, the equation provides a quick and very rough numeric tool to facilitate discussion relevant to the model statute.

- Based on the state's groundwater classification scheme, waters with TDS greater than 10,000 mg/L would be considered Class III (2500 – 15,000umohs/cm) or Class IV ground water (>15,000mS/cm). Class III groundwaters are to be maintained suitable for irrigation of salt tolerant crops, some commercial and industrial purposes and drinking water for some livestock and wildlife. Therefore, a person may not cause a violation of the state's numeric water quality standards (DEQ-7) except those for Nitrate. The standard for N is adjusted to 50 mg/L.

- Class IV waters are to be maintained suitable for some industrial and commercial uses. Therefore, a person may not cause a violation of DEQ-7 standards for parameters listed as carcinogens. Mercury is a toxic. Class III and IV groundwaters are not high quality waters of the state, therefore, water quality nondegradation policy would not apply and this activity could be added to MCA

75-5-317 (nonsignificant activities) provided it is permitted in accordance w/ the proposed statute and associated rules to be developed.

Ultimately the definition of USDW and its use in the IOGCC model statute as a metric of types of waters to be protected is too narrow and does not appear to be protective of the quality of state water in a manner that is consistent and/or complimentary to the MT WQA.

Many of the model statute programmatic provisions are similar to the WQ discharge permitting program; however, the model fails to specifically delineate and/or contain:

- Specific prohibitions of impacts to state water quality or other environmental resources,
- Signatory requirements for applications, permits and reports,
- Enforcement of chapter,
- Authority to deny a permit
- Provisions for contestation of permit or authorization.